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Lentivirus Expression of Hantavirus Nucleocapsid Proteins

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Abstract

© 2016, Springer Science+Business Media New York.Hantaviruses are classified as category A pathogens due to the high mortality rate and potential for major health impact. Therefore, virus propagation is restricted to the Biological Safety Level-3 containment laboratory. In this work, we utilized the recombinant lentivirus delivery system which can be used in Biological Safety Level-2 containment. Recombinant lentiviruses were obtained using Gateway cloning technology. Lentiviruses containing S segment of Hantaan, Sin Nombre, Prospect Hill, or Andes viruses were used to transduce lung carcinoma epithelial type II cells (A549). Accumulation of hantavirus S segment RNA was detected using real-time PCR. Additionally, expression of hantavirus nucleocapsid protein was detected in cells transduced with lentiviruses coding for hantavirus S segment. Hantavirus N proteins were found localized in perinuclear region. Interestingly, localization of N protein was similar to that found in hantavirus infected cells. Therefore, we suggest that lentivirus delivery approach could be used to study the mechanisms of hantavirus pathogenesis in Biological Safety Level-2 containment.

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Keywords

Hantavirus, Immunohistochemistry, Nucleocapsid protein, Recombinant Lentivirus